CONNECTOR ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a connector assembly, and more particularly, to a connector assembly capable of preventing arcing during mating process.

2. Description of the Prior Art

Recently, a connector with pogo pin has been implemented in a power plug coupled to a cable, wherein the power plug is used for mating with a power receptacle fixed on a notebook computer. When the power plug coupled to the cable is mated with the power receptacle on the notebook computer, the notebook computer can be charged or electrified for a user to operate, such as typing, playing video and so on. However, when long term use, the resistance between the power plug and the power receptacle will increase due to oxidation of the contacting surface of the pogo pin. As a result, the plug contact and the receptacle contact may be overheated during the mating process and further it will generate arcing and thus result in safety issue.

SUMMARY OF THE INVENTION

Thus, the present invention provides a connector assembly capable of preventing arcing during mating process for solving above drawbacks.

According to an embodiment of the present invention, a connector assembly includes a first connector and a second connector. The first connector is coupled to a first electronic device, and the second connector is coupled to a second electronic device and detachably mated with the first connector. The first connector includes a first housing and a magnetic member, and the magnetic member is installed inside the first housing and for generating magnetic field. The second connector includes a second housing and a magnetic sensor. The magnetic sensor is disposed in the second housing, and the magnetic sensor senses the magnetic field generated by the magnetic member when the second connector mates with the first connector, so as to drive the second electronic device to power the first electronic device.

According to another embodiment of the present invention, the first connector further includes a first contact set fixed inside the first housing. Each of the first contacts has a contacting surface, and a normal of the contacting surface is not parallel to a mating direction. The second connector further includes a second contact set fixed inside the second housing. An end of each of the second contacts contacts the contacting surface of the corresponding first contact and slides along the contacting surface from a first contact position to a second contact position when the second connector mates with the first connector along the mating direction.

In summary, the present invention adopts a design that the normal of the contacting surface of each of the first contacts is not parallel to the mating direction to allow the end of each of the second contacts of the second contact set to contact the contacting surface of the corresponding first contact when the second connector is inserted into the first connector along the mating direction, such that the end of the second contact slides from the first contact position to the second contact position. Accordingly, the oxidation layers on the end of the second contact and on the contacting surface of the first contact resulting from long term use will be scratched by the aforesaid sliding mechanism, so as to reduce resistance between the first contact and the second contact. In such a manner, the structure of the inclined surface adopted by the contacting surface of the first contact of the present invention not only prevents the first contact and the second contact from being overheated due to a large resistance, but also prevents the first contact and the second contact from arcing due to overheat when the first contact and the second contact are electrified, so as to enhance safety of the first connector and the second connector in use.

In addition, the present invention utilizes the control unit for driving the second electronic device to power the first electronic device when the magnetic sensor senses the magnetic field generated by the magnetic member, so as to confirm that current passes between the end of the second contact and the contacting surface of the first contact only when the end of the second contact slides along the contacting surface of the first contact from the first contact position to the second contact position. In such a manner, the present invention ensures that there will be no current passing between the end of the second contact and the contacting surface of the first contact before the oxidation on the end of the second contact and on the contacting surface of the first contact due to long term use is not scratched. Furthermore, it prevents the first contact and the second contact from being overheated due to the large resistance, as being electrified and to enhance the safety of the first connector and the second connector in use.

These and other objectives of the present invention will no doubt become obvious to those of ordinary skill in the art after reading the following detailed description of the preferred embodiment that is illustrated in the various figures and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a diagram of a connector assembly according to an embodiment of the present invention.

FIG. **2** is an exploded diagram of the connector assembly according to the embodiment of the present invention.

FIG. **3** is an exploded diagram of the connector assembly in another view according to the embodiment of the present invention.

FIG. **4** is a sectional diagram of the connector assembly in a first mated status according to the embodiment of the present invention.

FIG. **5** is a sectional diagram of the connector assembly in a second mated status according to the embodiment of the present invention.

FIG. **6** is an exploded diagram of a first connector in another view according to the embodiment of the present invention.

FIG. **7** and FIG. **8** are respectively diagrams of the first connector in different assembled statuses according to the embodiment of the present invention.

FIG. **9** is a partly sectional diagram of a connector assembly in a first mated status according to another embodiment of the present invention.

FIG. **10** is a partly sectional diagram of the connector assembly in a second mated status according to another embodiment of the present invention.

FIG. **11** is an exploded diagram illustrating the connector assembly is implemented in another first electronic device and another second electronic device according to the embodiment of the present invention.

FIG. **12** is an exploded sectional diagram illustrating the connector assembly is implemented in the first electronic device and the second electronic device according to the embodiment of the present invention.